009519

92I/14W
92I/NW-35

FERGUSON CREEK CHROMITE

The Chromite deposit on Ferguson has been known for some years and has been located and held by different parties but chiefly by Henry Cargile, of Ashcroft. The property is at present held by Mr. Cargile and J. L. Burr, also of Ashcroft.

LOCATION: The deposit is located in the gulch of Ferguson Creek, about 2 miles East of the Cariboo Highway along Bonaparte River, and about 20 miles by road West of of North of Ashcroft, B. C., in the Ashcroft Mining Division. Chromite is exposed in a tunnel at approximately 3,000 feet elevation and to an elevation of 256 feet above this. The tunnel is about 1,300 feet higher than the valley of the Bonaparte River to the West.

A road can be built to the deposit easily with a bull dozer at a cost of probably less than $1,000. Most of the road would be in terrace gravel and slide rock with little, if any, hard rock work required. With a rise of about 1,200 feet from the Ferguson Ranch below, the length of road should be about 2½ miles which would give approximate average grade of 9 per cent.

Both the Canadian National and Canadian Pacific Railways are available at Ashcroft and the Pacific Great Eastern of Clinton, also about 20 miles distant. Hauling charges to the railroad would probably be $2 to $3 per ton according to tonnage shipped.

Water is available for camp and mill purposes in Ferguson Creek though arrangements for its use would have to be made with the rancher on the creek below.

Timber for mining purposes is within easy reach and good mill and camp sites are available near the deposit.

OCCURRENCE and GEOLOGY: The Chromite deposit is in the steep cliffs and slide covered slope of the North side of the Valley. It is reported to outcrop on the South side of the valley also but was not examined there by the writer. On the North side the deposit follows a protruding ledge or cliff, the west wall of which strikes about N 30° W. This is shown in Figure 1, looking approximately along the face of the cliff, with the location of the samples also marked. The vulcano-sedimentary rocks overlying are 256 vertically higher than the tunnel mouth.

The Chromite outcrops in a belt several feet wide near the base of the cliff with the ore bands dipping under the slide rock in places. The Slide rock surface has an approximate slope of 35°. The cliff stands from a few feet at the upper end to 75 feet above the slide of the lower end as shown in Figures 2 and 3. The exposures of Chromite are shown in the map forming Figure 4 with a Cross section along the line A-A in Figure 5.

These show the outcrop as discontinuous but it is thought that nearly complete continuity would be shown if the slide rock were removed from the top to the tunnel level below. There are breaks along the deposit with some drag faulting so that the lenses and bes of Chromite are not always parallel with the extension of the deposit. In other places low dipping bands of Chromite split from the main deposit and extend away from it some distance in the cliff.

The country rock is serpentine derived from peridotite and or other basic rocks by hydro-metamorphism. This serpentine outcrops over a rather wide area, at least a thousand feet of it was traversed in reaching the deposit. It is capped by low dipping light colored later vulcano-sedimentary rocks 300 feet above the Creek bed.

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In places the serpentine and included Chromite ore is rather massive and but little broken, but in other places it is crushed and sheared, especially along a fault zone near the base of the cliff in the lower part of the deposit.

The Chromite occurs in banded or bulk aggregations of grains and in disseminated grains through the serpentine. Apparent high grade lenses occur both short and thick and with sheet-like dimensions. Large bodies of pure Chromite are rare and even the richest carry some included serpentine, magnesite or other impurities. The bulk of the ore consists of disseminated grains through the serpentine with a tendency to banding more or less parallel with the length of the deposit. The bands are of variable richness from low to high grade and are separated by still lower grade serpentine in places carrying only scattered grains of Chromite. An occurrence of a lens of high grade is shown in Figure 6.

DEVELOPMENTS: Development work consists of 167 feet of tunnel and an open cut as shown inFigures 1 and 4. The tunnel cut the ore (low grade) as shown but was driven off of and away from it. The open cut stripped a rather wide belt of disseminated ore apparently 8 feet thick but probably less if the dip of the bedding were ascertained and given proper consideration. The other exposures shown in figures 4 and 5 are outcrops with no work done on them with the exception of a little stripping at F 9.

A camp building had been erected near the deposit in the past but is in poor repair at present.

SAMPLES: A set of "educational" samples representing the grades of ore occurring in quantity were taken as one method of judging the value of the deposit. These were F1 to F 4. Another set of sections cut carefully across measured thicknesses were taken at points shown by F 5 to F 11. Three other samples were taken in connection with Mr. B. T. O'Grady, Provincial Mining Engineer, two educational and the third an 8 foot section.

These samples gave results as follows:

EDUCATIONAL LUMP SAMPLES:

F 1	@ 39.03%	Cr_2O_3	High grade from band in open cut at base of cliff.
F 2	@ 16.25%	"	Dark Milling ore from tunnel.
F 3	@ 27.48%	"	Milling ore from base of cliff.
F 4	@ 24.29	"	Milling ore from side of cliff.

SECTION SAMPLES:

F 5	5 feet @ 19.58%	Cr_2O_3	Banded disseminated ore in base of cliff.
F 6	3 " @ 23.83%	"	Banded ore with some high grade in cliff.
F 7	7 " @ 20.03%	"	Banded disseminated ore at base of cliff.
F 8	2 " @ 18.46%	"	" " " " " " "
F 9	2.5 " @ 14.39%	"	" " " in partly stripped area.
F 10	4 " @ 14.84%	"	Dark disseminated ore in tunnel.
F 11	6 inches @ 39.45	"	High grade streakprobably nearly same as F 1

SECTION SAMPLES: (Cont'd).

O'Grady	lump	@ 37.7%	Cr_2O_3	High grade from open cut at base of Cliff.
"	"	@ 28.8%	"	From outcrop.
"	8 feet	@ 10.6%		Section across bands of dissemenated ore and rocks.

It is thought F 7 and O'Grady sample may have been taken in part slantwise across the formation and the thickness used in calculating Chromic oxide content was cut from 7 and 8 feet to 6 and 6 feet respectively in these samples. Sample F 11 was not used in the calculations as it was only a small portion of the vein from near the O'Grady sample With these changes Samples F 5 to F 10 figure out to an average thickness of 4 feet and 17% Cr_2O_3. This is even higher than was judged as average ore from the educational samples and a study of the various exposures.

Figuring a right triangular block from vertically under the top outcrop to tunnel exposure, a heighth of 255 feet and length of 325 feet with a thickness of 4 feet and 11.6 cu. ft. per long ton there are 14,300 long tons available. At 17% there would be 2,331 tons Cr_2O_3. If the Chromite carries 45% Cr_2O_3 there would be 5,180 tons of Chromite in this block. With a 90% recovery 4,662 long tons would be obtained from the 14,300 tons representing a concentration ratio of 3 to 1.

See Sterrett letter in #9178, Dec 8/40

Naturally, one may expect this tonnage will be greatly increased by extension of work further Northwest and below the tunnel level. The tonnage of milling ore would be increased some 2,800 tons for every ten feet of depth below the tunnel level if the deposit is found to hold its continuity for the 325 feet length used in figures above. The writer would also expect to find a continuation of the deposit on the South side of the Creek. A further small tonnage can be obtained from the talus or slide rock below the outcrop which carries a considerable percentage of ore.

The assays of disseminated ore would seem to indicate a normal type of milling ore but the low Chrome content of apparent high grade massive ore F 1, F 11 and O'Grady lump sample raises the question of whether the Chromite in this deposit, or part of it, is not a low grade Chromium spinel, incapable of yielding a high grade concentrate. This question is all undetermined and separation test with various assays and analyses will be required to settle it.

As a preliminary step Mr. Williams took 100 grams each from samples F 5 to F 10 or 600 grams of 30 to 40 mesh ore with a calculated value of 18.5% Cr_2O_3. This was jigged down to 115 grams of concentrate assaying 43.18% Cr_2O_3. The crushing was not sufficiently fine to permit a clean separation of Chromite and serpentine and the concentrates appear to carry 8 or 10% of serpentine. There is also a small percentage of feebly magnetic mineral present.

The 600 grams of heads at 18.5% carry 111.0 grams Cr_2O_3 while the 115 grams of concentrates at 43.18% carry 49.66 grams of Cr_2O_3. The concentrates, therefore, carry 44.7% of the head value and the tails 55.3%. Calling the concentrates 90% Chromite would give 103.5 grams of Chromite with a 49.66 gram Cr_2O_3 content or 47.9% Cr_2O_3 in the pure Chromite of the concentrates. That is by the concentration method used there was a loss of 55.3% of the original Cr_2O_3 and a concentrate carrying about 90% Chromite was obtained in which the Chromite carries 47.9% Cr_2O_3.

Little is known of the nature of the dark mineral jigged off. If it is as rich as the Chromite in the concentrates it would run 47 to 48% Cr_2O_3 and with an 85% to 90% recovery in Milling would yield a concentrate of 40% to 43% Cr_2O_3.

If the material jigged off is a lower grade spirel or includes other dark minerals the concentrate would be even lower grade. The analysis of selected apparently high grade Chromite gave less than 40%, Cr_2O_3. This suggests that some of the Chromite in the disseminated ore is richer than the massive material and would, therefore, probably keep the grade of concentrate above 40% Cr_2O_3.

It is evident a series of tests in concentration and a study of the Chromite present will be required to determine methods of treatment, percentage of recovery and grade of concentrates to be expected. Also an analysis of the Chromite should be made to determine whether the metals present, other than Chromium are deleterious or may possibly present features of value in manufacture to offset the low grade.

CONCLUSIONS AND RECOMMENDATIONS: It is evident the deposit will not yield crude ore suitable for shipping in any quantity and the only possibility lies in concentration. In view of the tonnage of Chromite available in the Ferguson Creek deposit the writer feels that the tests and analyses suggested above are justifiable. The results of these and samples of concentrates that would be made should be submitted to experts in Chromium products and manufacturers.

If a market for the product is found the tunnel should be driven along the ore body to the Northwest as far as ore is found or until sufficient tonnage is indicated above it to justify mining and milling operations. Useful information regarding the ore body can be obtained by stripping the talus or slide rock from the base of the cliff, where these conceal the vein. The information obtained may be helpful in following the ore in the tunnel work below.

Douglas B. Sterrett

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Figure 1. Ferguson Creek Chromite. View N30°W toward Cliff carrying Chromite. Line of view about parallel with West face of cliff.

Figure 2. Ferguson Creek Chromite, View East toward West face of cliff with sample locations marked.

Figure 3. Ferguson Creek Chromite. View S55°E toward cliff.

Figure 6. Ferguson Creek Chromite. At base of cliff. Man holds pick against outcrop of high grade chromite. Sample F7 from immediately behind stadia rod.

Ferguson Creek Chromite Deposit
Ashcroft Mining Division
British Columbia.

Figure 4

PLAN

Legend
Chromite Exposures Shown thus

Samples, F5 etc.
Cr_2O_3, 19.58% etc

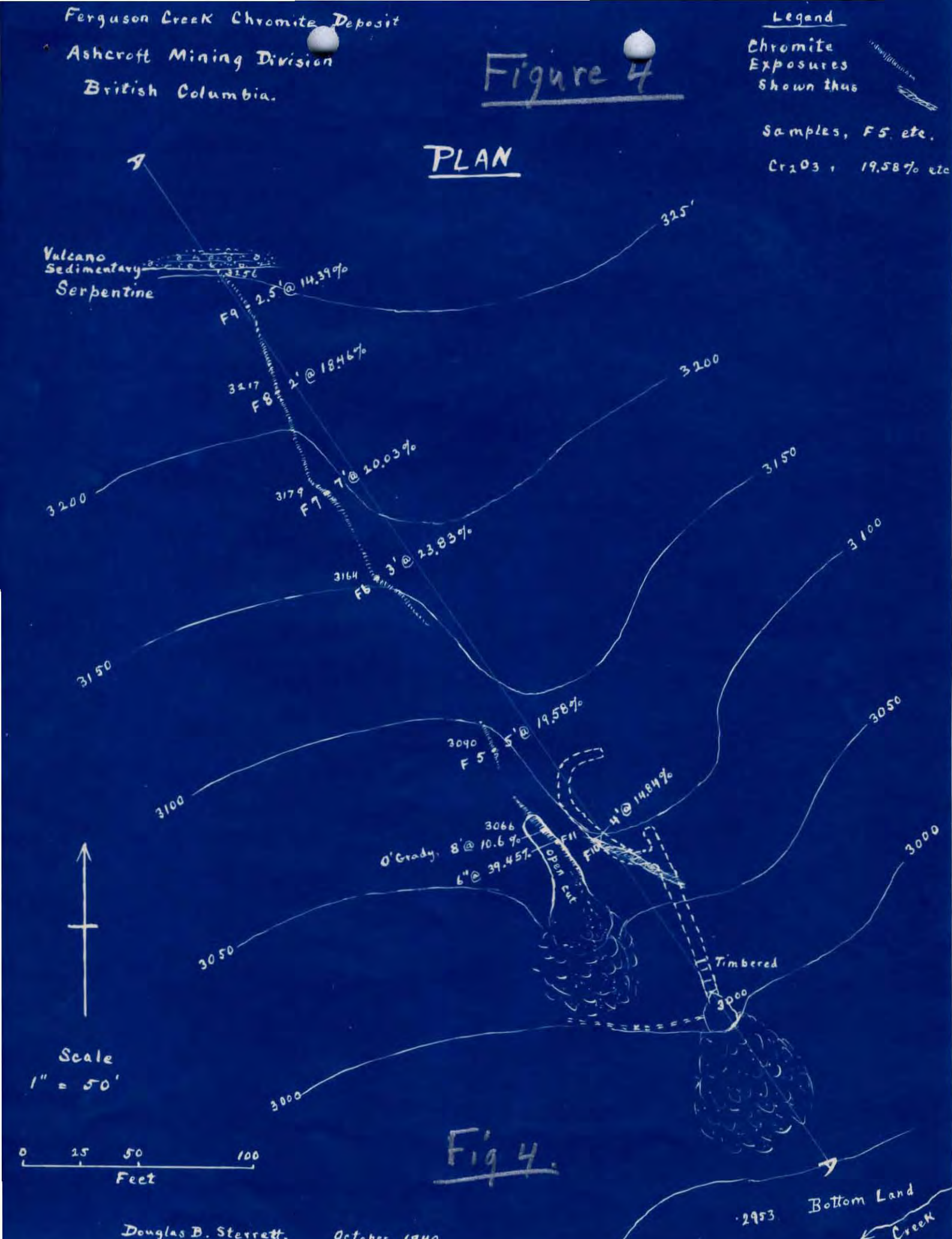

Fig 4.

Douglas B. Sterrett. October 1940

Ferguson Creek Chromite Deposit.

Ashcroft Mining Division.

British Columbia.

CROSS SECTION

Figure 5.

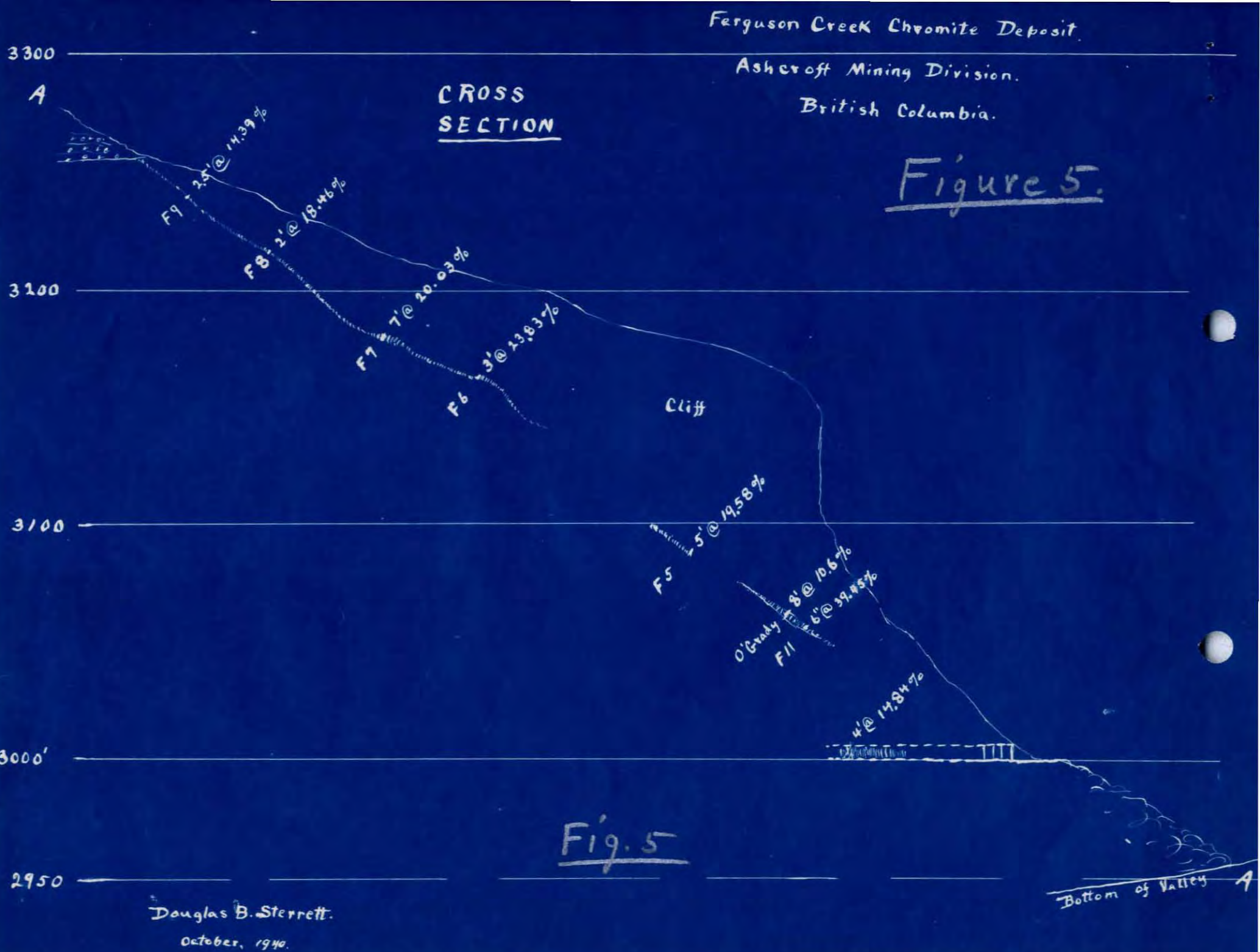

Fig. 5

Douglas B. Sterrett.

October, 1940.

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Ferguson
MAGNESITE
MINFILE ~~092INW035~~
092INW035

4312/41.

Maiden Creek Ranch,
Ashcroft, B.C.

June 15th, 1941.

P.B. Freeland, Esq.,
Chief Mining Engineer,
VICTORIA, B.C.

Dear Mr. Freeland:

I am forwarding to you by express a bag containing two samples of what is presumably largely magnesite. This forms as an alteration product of serpentinized pyroxenite and peridotite on Ferguson Creek. Sample A is a stony variety and Sample B is porous and earthy - neither appear very pure.

Will you please have these tested and the results sent to me at the earliest opportunity. I want particularly to know whether the material has any real or possible value, and consequently whether or not to spend much time in investigating and sampling material of this class. I would be obliged if Cummings could find time to examine the samples.

The more porous material, B, contains veinlets of silica, and the rock mass as a whole is fairly riddled by such veinlets.

Yours very truly,

"M.S. Hedley"

Mining Engineer.

(for magnesite file

4312/41.

June 17th, 1941.

Dr. M.S. Hedley,
Mining Engineer,
c/o Maiden Creek ranch,
ASHCROFT, B.C.

Dear Dr. Hedley:

Thanks for yours of the 15th, saying that you are sending some samples of probable magnesite.

When these arrive I will test them and advise you of the contents.

Yours very truly,

Chief Mining Engineer.

PBF/HG.

Copy for Magnesite File

4312/41.

June 21st, 1941.

Dr. M.S. Hedley,
Mining Engineer,
c/o Maiden Creek Ranch,
ASHCROFT, B.C.

Dear Matt:

Your letter of June 15th and samples have been turned over to me for attention. I have had the samples analysed (accounting for the delay in replying to you) and the results are as follows:--

	"B"	"A"
Insoluble	58.5	38.5
MgO	8.0	17.0
CaO	9.3	11.0
Fe_2O_3	8.3	6.9

I am afraid that this material has little promise of being economic, insofar as the magnesite content is altogether too low to be of interest.

With best regards.

Yours very truly,

Associate Mining Engineer.

JMC/HG.